



just right®











right BOND™

Aluminum Composite Panels

User's Manual

Index

	Item Detail	Page No.
	Introduction	03
	Production	06
	Specifications	11
	R & D, Quality Assurance	13
	Test Reports	14
	Fabrication	24
	Projects	34

rightBOND™

rightBOND™ aluminium composite panel from just right® is made by bonding prefinished aluminium outer layer sheet to base aluminium sheet with a thermoplastic core. rightBOND™ FR is a fire retardant aluminium composite panel with a mineral core. The adhesion in both is achieved by a combination of chemical and mechanical actions, providing exceptional resistance to delamination. It resists buckling, chipping, rippling and staining compared to other surfacing materials. The Bynel adhesive from DuPont™ ensures the right bonding experienced never before.

Manufactured under ISO 9002 systems using state-of-art continuous coil coating production line with double coating and baking stations. This gives us flexibility to coat any custom matched colors most efficiently to satisfy project requirements.

rightBOND™ has a wide product line depending upon its top surface finish.

rightBOND™eco

rightBOND™ eco has a multilayer polyester coating, with good abrasion resistance, color vibrancy and easy customization ability. It is ideal for low-level exterior cladding, interior applications, signage etc. Double side polyester coated panels can be manufactured, giving wider colour selection flexibility to our customers. Special surface for digital printing can be developed for excellent print results.

rightBOND™spectra

rightBOND with special iridescent spectrum color effect. Available, in wider color range. Can be treated with PVDF and Nano surface coatings.

rightBOND™speciality

rightBOND™ speciality comes with special finishes such as natural stone and wooden pattern, mirror and hairline finish, sparkling and iridescent colors designed to create special effects. It is ideal for use in interiors, signage, POP, POS etc.

rightBOND™nano

rightBOND nano painted panels are developed from a special nano multilayer coating technology. It gives superior performance as self-cleaning, pollution resistant, oil resistant, dust resistant, making the surface anti graffiti, giving longer lasting new look to the building structure. Excellent aging resistance with unique gloss makes it perfect choice for high profile building projects.

rightBOND™pvdf

rightBOND™ pvdf comes with fluorocarbon coating, an ideal surface due to its excellent UV resistance and easy clean feature. It is ideal to implement Corporate Identity design and cladding applications for building facade, roof, column, arch, soffit etc.

rightBONDTM_{eco}

Standard Offer:

Thickness range : 1mm - 6mm
Width : upto 1525mm, Length: upto 8000mm.
Colors : 27 standard metallic and solid colors,
Color & size customization possible

rightBONDTM_{spectra}

Standard Offer:

Thickness : 3mm
Width : 1220mm, 1525mm
Length: 2440 & 3050 mm
Colors : 27

Thickness range : 3mm - 6mm
Width : upto 1525 mm, Length : upto 8000mm.
Range : 6 standard spectrum colors
Color & size customization possible
FR option possible

rightBONDTM_{speciality}

Standard Offer:

Thickness range : 2mm - 6mm
Width : upto 1220mm, Length: upto 5000mm.
Range : 36 standard finishes and more.

Thickness : 3mm
Width : 1220mm
Length: 2440
Colors : 36

rightBONDTM_{nano}

Standard Offer:

Thickness range : 3mm - 6mm
Width : upto 1525 mm, Length : upto 8000mm.
Range : 6 standard metallic colors
Color & size customization possible
FR option possible

Thickness : 4mm
Width : 1250mm, 1525mm
Length: 3050 & 4000 mm.
Colors : 6

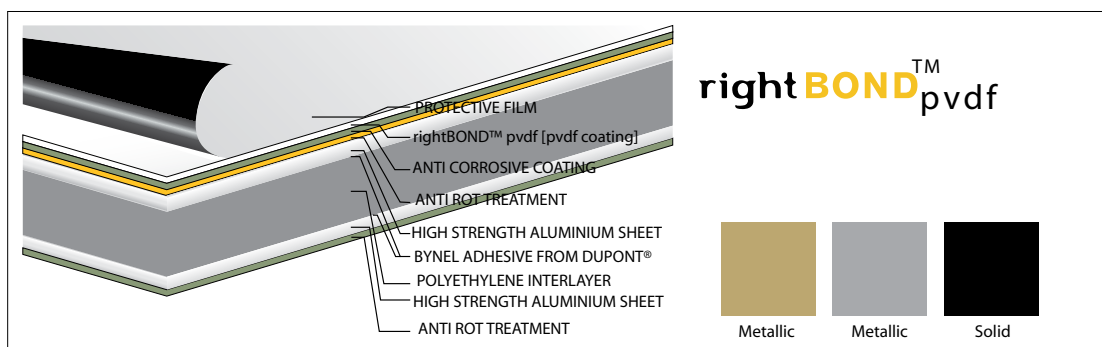
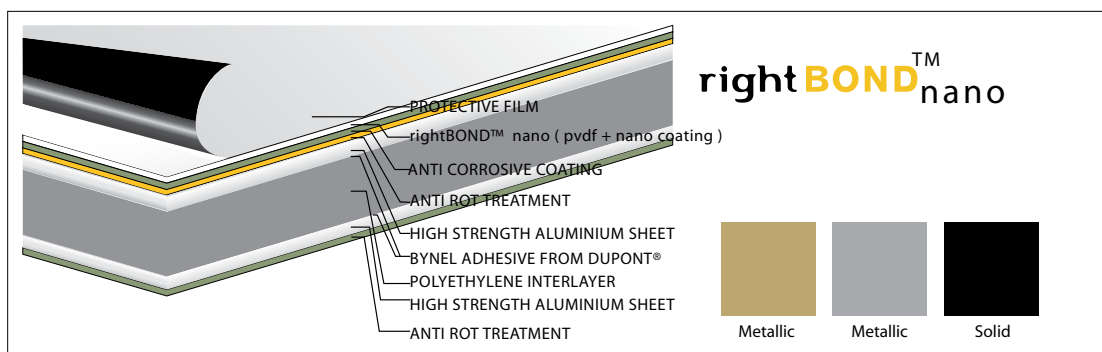
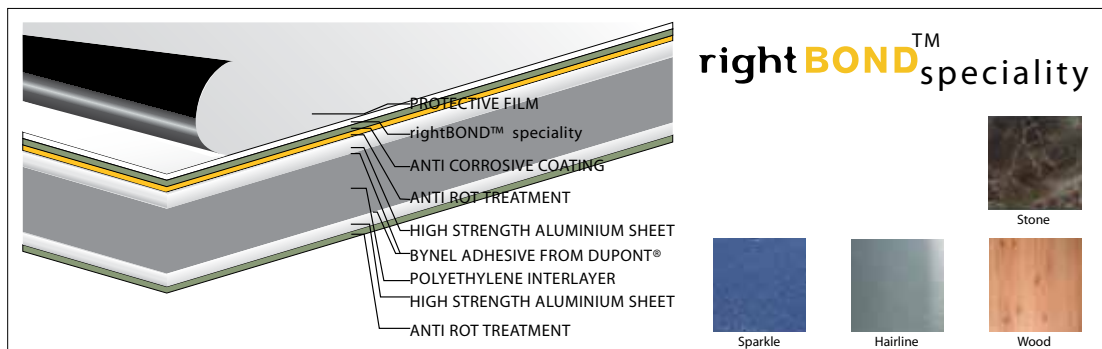
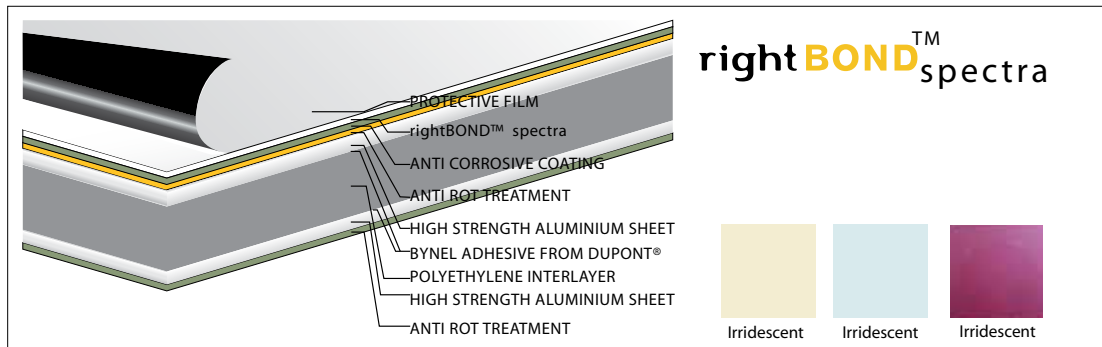
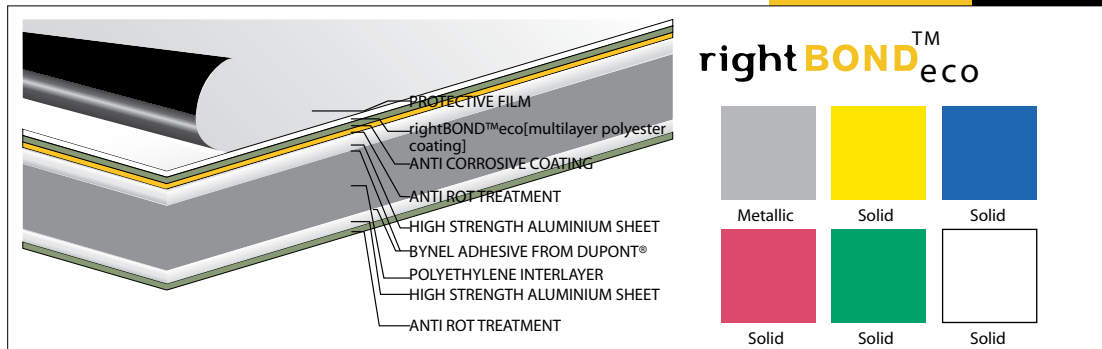
rightBONDTM_{pvcdf}

Standard Offer:

Thickness range : 3mm - 6mm
Width : upto 1525mm, Length: upto 8000mm.
Colors : 15 standard metallic and solid colors
Color & size customization possible
FR option possible

Thickness : 4mm
Width : 1250mm, 1525mm
Length: 3050 & 4000 mm.
Colors : 15

Sectional View



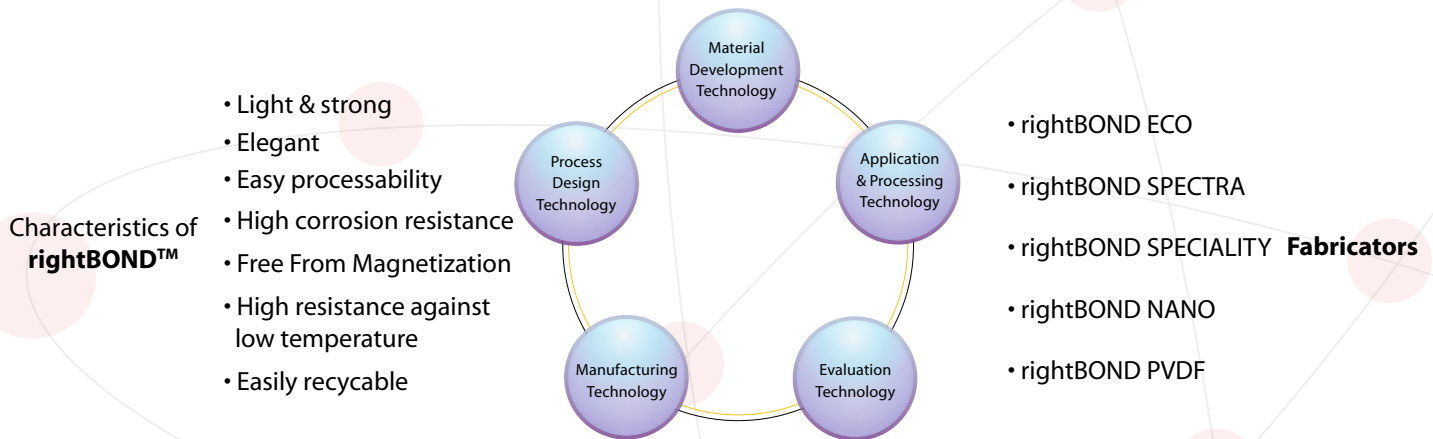
Note : Please refer to right BOND™ color chart for more colours

Production



Research & Development

rightBOND™ range is the ultimate result of intensive Research & Development



We understand specific market needs & translate it into a new product to meet specific requirements.

Some achievements of the R & D facility are:

rightBOND Spectra colour range. For multi color two tone effects.

rightBOND Antibiotic Aluminium Composite Panels for hospitals.

rightBOND FR panels available in various FR classes.

rightBOND ECO can be produced in any RAL or other colour shades. This is possible through the state-of-the-art Paint Matching System (PMS).

rightBOND in multiple core options like PE or PU & multiple composition options with steel, galvanized steel, brushed steel, etc.

Quality Assurance

Team of highly qualified technical professionals identifies, implements & controls the manufacturing process of rightBOND™. It starts to complete a well defined flow as per the Quality Plans tested during several years of production.

Inward Raw Material Control as per the Quality Plan.

On-line testing facility as per the Quality Plan

Finished goods storage & testing as per the Quality Plan.

Statistical Process Control shows our control on the process through well identified control charts. This is necessary to assess the nature of variation in manufacturing process to facilitate forecasting & management. This is how rightBOND™ fulfills or exceeds customer expectations.



Common Features

Superior Quality Finish

rightBOND™ surface is prefinished giving a superior solid, metallic printed and other special finishes.

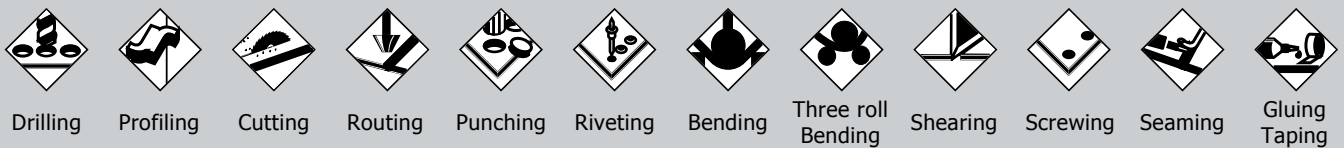


Lightweight

rightBOND™ 4mm standard panel weighs approximately 5.5kg/m² providing considerable saving in transportation, fabrication and installation and shortens the completion time of projects.

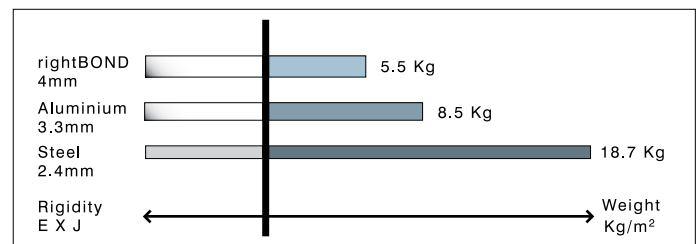
Easy to fabricate

rightBOND™ can be cut, routed, folded, bent, sawed, curved and shaped with light conventional tools. Rigidity and flatness are maintained during such processes due to its composite construction.



Composite Construction

Due to its composite construction rightBOND™ offers many advantages over conventional homogenous materials such as solid aluminium and steel.



Comparison chart between rightBOND™, solid aluminium and steel

Item	rightBOND™	Solid Aluminium	Steel
Weight	4mm: 5.4kg/M ²	3mm: 8.0kg/M ²	1.5mm: 11.47kg/M ²
Flatness	Very Flat	Uneven	Uneven
Heat Insulation	Best	Poor	Poor
Sound Insulation	25db	15db	15db
Echo Response	Low	Medium	High
Paint Consistency	Best	Inconsistent	Inconsistent
Paint Microns	Even	Uneven	Uneven
Weather Proof	Good	Good	Good
Fire Proof	Good	Good	Good
Fabrication	Easy	Difficult	Difficult
Delivery	Quick	Slow	Slow
Total Cost	Economical	Medium Cost	Expensive
Maintenance	Easy	Easy	Easy
Installation	Quick	Slow	Slow

Comparison with solid aluminium

Rigidity E.J	rightBOND™			Aluminum	
	Section modulus	Thickness	Weight	Thickness	Weight
0.125kNm ² /m	1.25cm ³ /m	3mm	3.8 kg/m ²	2.7mm	7.3 kg/m ²
0.240kNm ² /m	1.75cm ³ /m	4mm	5.5 kg/m ²	3.3mm	8.9 kg/m ²
0.590kNm ² /m	2.75cm ³ /m	6mm	7.3 kg/m ²	4.5mm	12.2 kg/m ²

Quick Installation

rightBOND™ can be easily formed into panels by way of routing and folding. The modular panels can be formed in the factory or on site and can be quickly installed with conventional fastening and cladding systems. This feature can save huge labour cost and shorten completion time. rightBOND™ is also compatible to most cladding systems used.



Resistant to blow and breakage

rightBOND™ panels have high strength and rigidity with excellent deflection capacity. The rigidity of 4mm rightBOND™ panels approximately equals that of 3.3mm solid aluminium or 2.4mm steel.

Weatherability

rightBOND™ panels are coated with superior coatings and finishes that provide resistance to fading, color change, weather damage, corrosion and chalking.

Vibration Damping

The unique feature of rightBOND™ panel is its low resonance, not attainable by other building materials.

Sound Insulation

4mm rightBOND™ panels have a sound reduction about 25 dB which is nearly double than that of other building materials.

rightBOND™ Thickness	Sound Reduction
3 mm	23 db
4 mm	24 db
6 mm	25 db

Easy maintenance

Panels can be washed with water and mild detergent using a sponge or soft brush.

Thermal Expansion

Thermal expansion is effectively controlled by aluminium cover sheets. At a difference in temperature of 100k, the actual linear expansion is 2.4mm/M

Applications

rightBOND™ aluminium composite panel is a multipurpose panel, suitable for diverse applications such as

Architecture : Exterior facades or cladding, roofs, canopies, soffits for diverse buildings such as Commercial, Residential, Institutional - Hospitals, Schools, Trade Centers, Cultural Centers, Infrastructure- Airports, Railway Stations, Tunnels, Bridges etc.



Interiors where easy clean feature is required for wall paneling, column cladding, false ceiling, furniture, etc.



Corporate Identity Design

implementation of Brands for Petrol Stations, Automobile Showrooms, Bank Branches, Telecom Outlets, Retail Chains, etc.



Transport

Exterior and Interior panelling or shutters of commercial vehicles such as buses, pick-up, trucks & vans.



Industry

Furniture cladding POP's, POS etc.





rightBONDTM pvdf Technical specifications

Aluminum Composite Panels, 4mm, PVDF Coated

Property	Values
Appearance	Clean surface without swell, flaws, scratch and aberration
Deviation of dimension	Length : $\pm 3\text{mm}$ Deviation of diagonal : $\leq 5\text{mm}$ Width : $\pm 2\text{mm}$ Out of straight at sides : $\leq 1\text{mm/m}$ Thickness : $\pm 0.2\text{mm}$ Warpage : $\leq 5\text{mm/m}$
Thickness of coating	$\geq 25\text{um}$
Deviation of Coating	≤ 10
Pencil Hardness	$\geq \text{HB}$
Toughness of coating	$\leq 3\text{T}$
Coating Adhesive	Not less than Class 1
Impact Strength	50kg.cm Without paint off and crack
Boiling water resistance	Boiling for 2h without change
Acid resistance	Immerse surface with 2% HCL [v/v] for 48h without change
Alkali resistance	Immerse surface with 2% NaOH [m/m] for 24h without change
Oil resistance	Immerse surface with 20 # engine oil for 24h without change
Solvent resistance	Clean 100 times with Dimethylbenzene without change
Cleaning resistance	≥ 10000 times without change
Contamination resistance	$\leq 15\%$
Density of surface	Specified value: $\pm 0.5\text{kg/m}^2$
Abrasion resistance Density of Surface	Specified value: $\pm 0.5\text{kg/m}^2$
Bending Strength	$\geq 100\text{ MPa}$
Flexuuous modulus of elasticity	$\geq 2 \times 10^4\text{MPa}$
Through resistance	$\geq 9\text{ kN}$
Cutting Strength	$\geq 28\text{ MPa}$
180 Peel Strength	$\geq 7\text{ N/mm}$
Resistance to change to temperature	- 40°C~80°C, 20 cycles without change
Heat deformation temperature	$\geq 105\text{ °C}$
Coefficient of heat expansion	$\leq 4.00 \times 10^{-5}\text{ °C}^{-1}$
Weight	5.4 kg/ m^2
Sound Attenuation	24 Rw dB
Thermal Performance R Value	0.0113 $\text{m}^2\text{K/W}$
Water Absorption	0.1% by volume



rightBOND™ eco Technical specifications

Aluminium Composite Panels, 3mm, PE Coated

Property	Values
Appearance	Clean surface without swell, flaws, scratch and aberration
Deviation of dimension	Length : $\pm 3\text{mm}$ Deviation of diagonal : $\leq 5\text{ mm}$ Width : $\pm 2\text{ mm}$ Out of straight at sides : $\leq 1\text{mm/m}$ Thickness : $\pm 0.2\text{mm}$ Warpage : $\leq 5\text{mm/m}$
Thickness of coating	$\geq 16\mu\text{m}$
Deviation of coating	≤ 10
Pencil Hardness	$\geq \text{HB}$
Toughness of Coating	$\leq 3\text{T}$
Coating Adhesive	Not less than Class 1
Impact Strength	50 Kg.cm Without Paint Off and Crack
Boiling water resistance	Boiling for 2h without change
Acid resistance	Immerse surface with 2% HCL [v/v] for 48h without change
Alkali resistance	Immerse surface with 2% NaOH [m/m] for 24h without change
Oil resistance	Immerse surface with 20# engine oil for 24h without change
Solvent resistance	Clean 100 times with Dimethylbenzene without change
Cleaning resistance	≥ 10000 times without change
Abrasion resistance Density of Surface	Specified value: $\pm 0.5\text{kg/m}^2$
Bending Strength	$\geq 60\text{ MPa}$
Flexuous modulus of elasticity	$\geq 1.5 \times 10^4\text{ MPa}$
Through resistance	$\geq 5.0\text{kN}$
Cutting Strength	$\geq 20\text{ MPa}$
180 Peel Strength	$\geq 5.0\text{N/mm}$
Resistance to change to temperature	$-40^\circ\text{C} \sim 80^\circ\text{C}$, 20 cycles without change
Heat deformation temperature	$\geq 95^\circ\text{C}$
Coefficient of heat expansion	$\leq 4.00 \times 10^{-5} \text{ }^\circ\text{C}^{-1}$
Weight	3.8kg/m^2
Sound aberration	24Rw dB
Thermal Performance R Value	$0.0080\text{ m}^2\text{ K / W}$
Water Absorption	0.1% by volume

Ministry of Public Works
Govnt Center For Testing & Laboratories
Cons. Labs. Department
Kaifan - Kuwait
Tel: 4842529 - 4840381 (1330)
Fax: 4841931



وزارة الأشغال العامة
المركز الحكومي للفحوصات والمختبرات
إدارة مختبرات الإنشاءات
كايفان - الكويت
تليفون: 4842529 - 4840381 (1330)
فاكس: 4841931

App. No.:

Date : 27/06/2006

Applicant: On Behalf of just right Middle East FZE

On : 30/05/2006

Contract : -

Lab No.: 305/2006

Description of sample : Right BOND PVDF Aluminum composite panels, 4mm, PVDF COATED

Test	Period of test	Results
Boiling water resistance	2 hrs immersion	Surface is not affected
Acid resistance (2 % HCl (v/ v))	48 hrs , spot test	Surface is not affected
Alkali resistance (2 % NaOH)	24 hrs , spot test	Surface is not affected
Oil resistance , 20 # engine oil	24 hrs immersion	Surface is not affected
Solvent resistance, Dimethy benzene , 100 times cleaning	-	Surface is not affected
Water absorption	24 hrs	0.00 %
Weatherometer resistance 60°C , (50-55 %) RH	500 hrs	Sample is not affected

Remarks: * Test results represent only the sample submitted.

DIRECTOR, CONSTLABS.DEPARTMENT

TEST REPORT

No. : GZML05126294-03

Date : Dec.21,2005

Page :1 of 2

JUST RIGHT TAIWAN INC.
2F, NO 11-8, JUNG JENG ROAD,
TAIPEI, TAIWAN.

The following sample(s) was/ were submitted and identified on behalf of the client as:

Sample Name : RIGHT BOND

Product or Lot No. : WBPO51125F

Manufacturer : JUST RIGHT

Date of Receipt : Dec.05,2005

Test Period : Dec.05,2005 to Dec.20,2005

Test result(s) : For further details, please refer to the following page(s)

***** To be continued *****

Signed for and on behalf of
SGS-CSTC Standards
Technical Service Co., Ltd.



Michael Zhang
Section Head

This Test Report is issued by the Company subject to its General Conditions of Service printed overleaf or attached. Said Conditions are also available upon request or are accessible at www.sgs.com. Attention is drawn to the limitations of liability, indemnification and jurisdictional policies defined therein. The results shown in this Test Report refer only to the sample(s) tested unless otherwise stated and such sample(s) are retained for 90 days. This Test Report shall not be reproduced except in full, without written approval of the Company.

TEST REPORT

No. : GZML05126294-03

Date : Dec.21 2005

Page: 2 of 2

Test Result(s):

sample description: RIGHT BOND

NO.	Test item	Ref. standard	Test condition	Result
1	Unit weight (kg/m ²)	Supplied by client	Calculate by the weight and size	5.55
2	Heat deflection temperature (°C)	ASTM D648-01 and client's requirement	Span: 100mm; Load: 1.82MPa Heating rate: 120°C/h	98.0
3	Bending strength (MPa)	ASTM D790-03	Speed: 1.3mm/min; Span: 64mm;	112.8
4	Bending elastic modulus (MPa)			16640
5	Through resistance (kN)	ASTM D732-02	Speed: 1.3mm/min	8.4
6	180° peel strength (N/mm)	ASTM D903-98	Speed: 152.4mm/min	10.6
7	Tensile strength (MPa)	ASTM E8-04	Speed: 2.0 mm/min	41.7
8	Dry adhesion	AAMA2605-02	Cut space: 1mm Tape: 3M® 610#	More than 4B
9	Thermal expansion Coefficient (1/°C) -30.00°C ~ 30.00°C	ASTM D696-03	Heat from -30.00°C to 30.00°C at 10.0°C/min; F=50mN	275.4e-6

Note: Test item 9 was conducted in SGS Taiwan Co., Ltd.

*****End of report*****

This Test Report is issued by the Company subject to its General Conditions of Service printed overleaf or attached. Said Conditions are also available upon request or are accessible at www.sgs.com. Attention is drawn to the limitations of liability, indemnification and jurisdictional policies defined therein. The results shown in this Test Report refer only to the sample(s) tested unless otherwise stated and such sample(s) are retained for 90 days. This Test Report shall not be reproduced except in full, without written approval of the Company.

TEST REPORT



Your Ref: -

Date: 25 May 2006

Our Ref: 54S062763/1/OKH

DID: 68653783

Fax: 68621433

NOTE: This report is issued subject to PSB Corporation's "Terms and Conditions Governing Technical Services". The terms and conditions governing the issue of this report are set out as attached within this report.

SUBJECT:

Large scale surface spread of flame test on "RIGHT BOND" Aluminium Composite Panel material submitted by "just right" on 19 Apr 2006.

TESTED FOR:

just right Taiwan Inc.
2 F, No 11-8, Jung Jeng Road,
Taipei, Taiwan.

Dr. B K Yao (Technical Director)

DATE OF TEST:

15 May 2006

PURPOSE OF TEST:

To determine the tendency of the surface of a material or a combination of materials to support the spread of flame across its surface and to classify the surface according to the test given in British Standard 476 : Part 7 : 1997.

The test was conducted at PSB Corporation fire test laboratory located at No. 10 Tuas Avenue 10, Singapore 639134.



LA-2001-0212-A
LA-2001-0213-F
LA-2001-0214-E
LA-2001-0215-B
LA-2001-0216-G
LA-2001-0217-G

The results reported herein have been performed in accordance with the laboratory's terms of accreditation under the Singapore Accreditation Council - Singapore Laboratory Accreditation Scheme. Tests marked "Not SAC-SINGLAS Accredited" in this Report are not included in the SAC-SINGLAS Accreditation Schedule for our laboratory.

DESCRIPTION OF SAMPLES:

9 pieces of sample, said to be " RIGHT BOND " (4mm thick x 6.7 kg/M²) Aluminium composite panel material comprising of 0.5 mm thick front aluminium skin with Fluorocarbon (PVDF) coating finished / 3.0 mm thick fire rated LDPE core / 0.5 mm thick back aluminium skin with Polyester (PE) coating finished, each of nominal size of 885 mm x 270 mm where received.

TEST PROCEDURE:

Prior to test, the specimens were prepared and conditioned in accordance with paragraphs 5.3 to 5.6 of the standard and secured to a specimen holder as described in paragraph 6.3.

Six specimens were tested with the Fluorocarbon (PVDF) coating face exposed to the specified thermal radiation from the apparatus described in paragraph 6.1 of the standard. The intensity of the radiated heat incident on the specimen varies with distance from the hotter end, so that when the specified calibration panel is mounted in the place to be occupied by the specimen, the irradiance of the radiometer is as given in Table 1. The test was terminated when the flame front reached the 825mm reference line, or after 10 minutes has elapsed, whichever is the shorter.

Table 1 : Irradiance Along Horizontal Reference Line on the Calibration Board

Distance along reference line from inside edge of specimen holder mm	Irradiance kW/m ²		
	specified	min.	max.
75	32.5	32.0	33.0
225	21.0	20.5	21.5
375	14.5	14.0	15.0
525	10.0	9.5	10.5
675	7.0	6.5	7.5
825	5.0	4.5	5.5

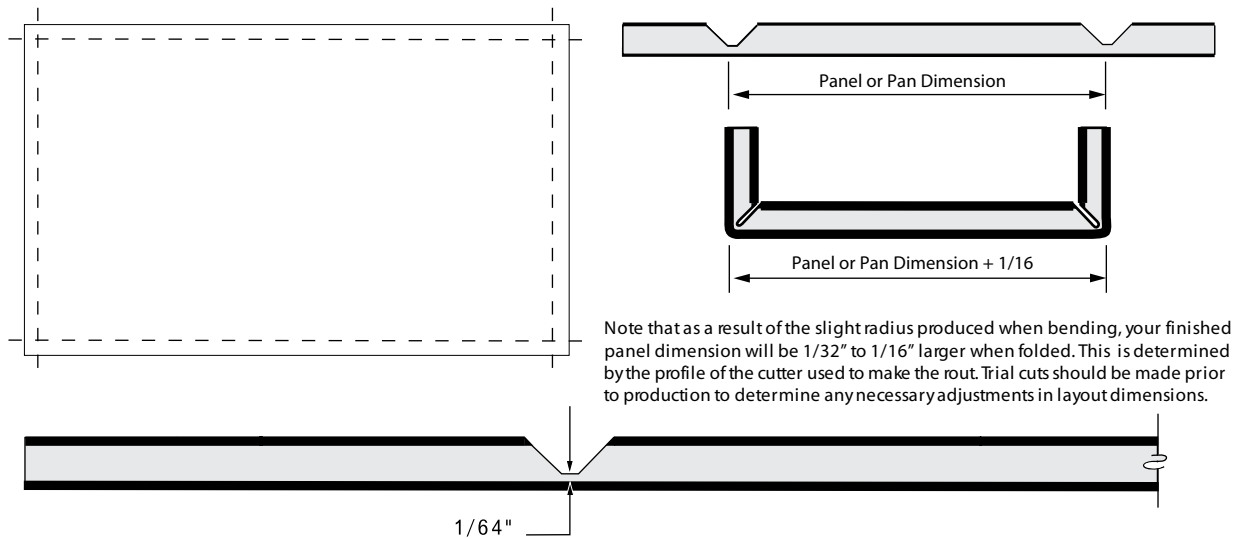


Installation Schemes

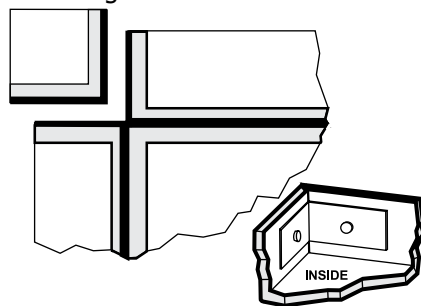
Typical Details for making panels Rectangular Panels

A "pan" is easily fabricated by routing all four sides, notching the corners and folding or returning each of the routed sides. This type of fabrication is commonly referred to as "Rout and Return"

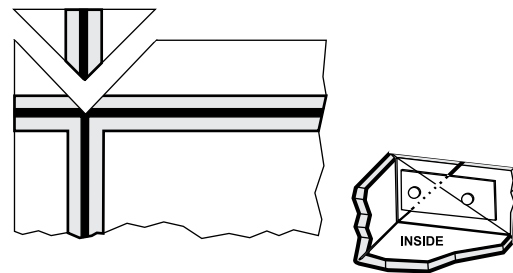
Grooving



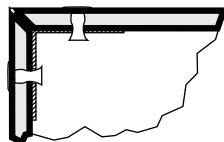
Corner Notching



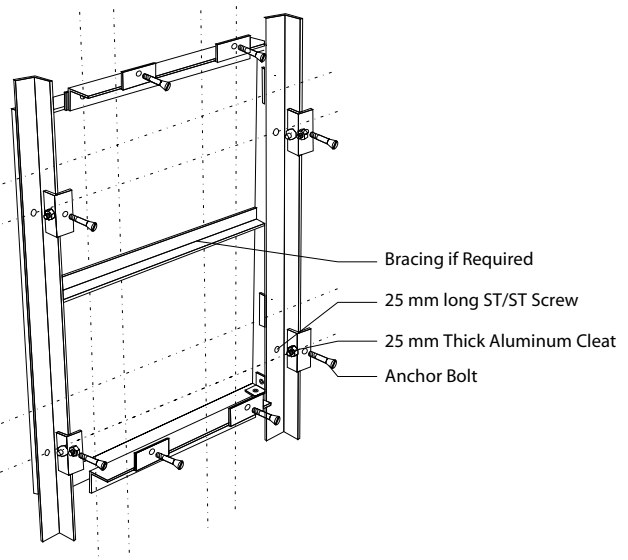
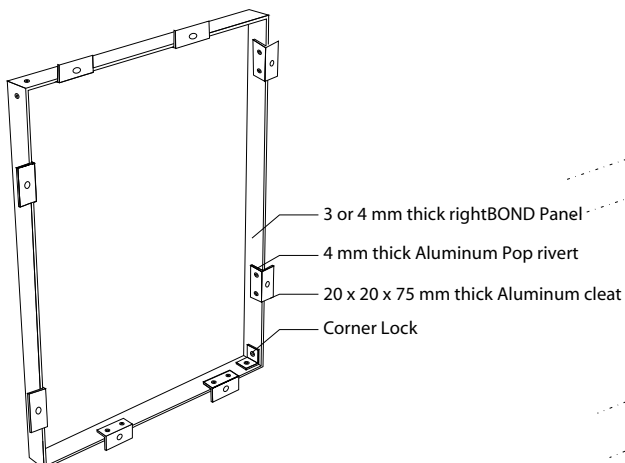
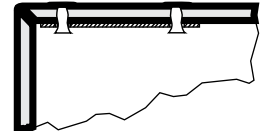
Square Corner Cutouts



Envelope Corner Cutouts



NOTE : It is not necessary to reinforce the returned corner. The material is most easily bent when the rout is made atleast one inch or more from the edge of the panel.



TEST REPORT: 57S064971-LPL_CORR01



Date: 10 NOV 2006

Tel: +65 68851322 Fax: +65 67784301

Client's Ref: -

Email: tai-hoe.lin@psbcorp.com

Note: This report is issued subject to TÜV SÜD PSB Corporation's "Terms and Conditions Governing Technical Services". The terms and conditions governing the issue of this report are set out as attached within this report.

SUBJECT

Testing of Nano PVDF coated aluminium composite panel

CLIENT

Just Right Middle East.
Plot No. MO 0427
P.O. Box 17182
Jebel Ali Free Zone
Dubai UAE.

Attn : Mr Nilesh Jain

SAMPLE SUBMISSION DATE

01 Sep 2006

DATE TEST CONDUCTED

04 Sep to 08 Nov 2006

SAMPLE DESCRIPTION

One sample of coated aluminium composite panels described as follows was submitted by the above company.

Brand Name	Dimension (mm)	Quantity
"Just Right"	150 x 100 x 4	35 pieces



Laboratory:
TÜV SÜD PSB Corporation Pte. Ltd.
Testing Group
No.1 Science Park Drive
Singapore 118221

Phone : +65-6885 1333
Fax : +65-6776 8670
E-mail: testing@psbcorp.com
www.psbcorp.com
Co. Reg : 199002667R

Regional Head Office:
TÜV SÜD Asia Pacific Pte. Ltd.
3 Science Park Drive
#04-01/05 The Franklin
Singapore 118223

H. Cleaning



Careful and regular rightBOND™ cleaning procedures are required to maintain surface of rightBOND™. Frequency of cleaning depends on environmental conditions. Both manual or mechanical cleaning is suitable.

As such rightBOND™ PVDF coated finish is easy clean and requires simple procedures to wash away dust and dirt. As a rule, cleaning should be carried out from top to bottom. While cleaning use the following method in order of increasing difficulty of removal.

Flush with water from hose.

Wipe lightly with soft cloth.

Use pressure water.

Use mild detergent in power wash or with soft cloth for hand wiping and flushing with water.

In case of stubborn stains or graffiti, use mild detergent, 3 to 10 parts with water depending on desired results.

Powerful chemicals such as acids, alcohols, alkaline cleaning agents such as potassium hydroxide, sodium carbonate or caustic soda, heavily abrasive agents, coating dissolving agents should not be used for cleaning.

I. Masking or Protective Foil



rightBOND™ sheets are provided with a factory applied protective masking film which should be removed within 6 weeks of installation.

The foils are also provided with directional markings to aid direction during installation to minimised reflection differences in metallic colors.



TEST REPORT: 57S064971-LPL_CORR01
10 NOV 2006



RESULTS (CON'T)

Test Item	"Just Right" Aluminium Composite	AAMA 2605-05 Requirement
2) Visual examination	Passed	Free from flow lines, streaks, blisters or other surface imperfections
3) Colour uniformity	*	Consistent with the established colour range
4) Specular gloss at 60°	39	Within ± 5 units of manufacturer's specification
5) Dry film scratch hardness	F	Minimum F (No rupture of film)
6) Dry adhesion	No removal of film	No removal of film
7) Wet adhesion	- No blistering - No removal of film	- No blistering - No removal of film
8) Boiling water adhesion	- No blistering - No removal of film	- No blistering - No removal of film
9) Impact resistance	No removal of film from substrate	No removal of film from substrate
10) Abrasion coefficient, (litres/ mil)	41	40 minimum
11) Muriatic acid resistance, 10% (v/v) HCl	- No blistering - No visual change	- No blistering - No visual change
12) Mortar resistance	- Mortar dislodged easily - No residue - No loss of film adhesion - No visual change	- Mortar shall dislodge easily - Any residue shall be removable with a damp cloth - Any lime residue should be easily removed with 10% muriatic acid solution - No loss of film adhesion - No visual change
13) Nitric acid (70% w/w) resistance, colour change, ΔE (Hunter)	1.6	Not more than 5 ΔE units (Hunter)

Note : * test not conducted as reference specimen is not available.

TEST REPORT: 57S064971-LPL_CORR01

10 NOV 2006



RESULTS (CON'T)

Test Item	"Just Right" Aluminium Composite	AAMA 2605-05 Requirement
14) Detergent resistance	<ul style="list-style-type: none">- No loss of film adhesion- No blistering- No significant visual change	<ul style="list-style-type: none">- No loss of film adhesion- No blistering- No significant visual change
15) Window cleaner resistance	<ul style="list-style-type: none">- No removal of film under tape- No blistering- No visual change	<ul style="list-style-type: none">- No removal of film under tape- No blistering- No visual change

MS LIU PEILIN
TECHNICAL EXECUTIVE

MRS WONG-LIN TAI HOE
PRODUCT MANAGER
COATINGS
CHEMICAL & MATERIALS

Important Notice

The information and typical values shown are based on an ongoing process of research and development believed by just right to be reliable. The values listed herein are typical values and are not in use for specification. The information and values mentioned herein are subject to change without prior notice and just right® cannot held liable for any such changes. This does not constitute a warranty or guarantee in any manner whatsoever. All users are advised to ensure that performance and reliability of products is independently tested and verified by them for the intended use. Improper usage can result in destruction and loss of material.

Data sheets are modified to suit printing layout, certain deletion and modifications are made on actual test reports recd, however the testing data is accurate as per test results.

All logo's and trade marks are properties of respective companies who are component suppliers to the product.

Warranty

just right® products are produced under stringent manufacturing conditions. However, any material shown to our satisfaction to be allegedly defective at the time of sale will be replaced. The aggregate liability of just right® to the purchaser shall in no circumstances exceed the cost of the defective materials supplied. just right® cannot be held liable for any direct, indirect, special, incidental damages, consequential or any other kind of loss on any legal theory.

just right® cannot be held liable for inaccurate or unauthorised representations made with respect to just right® products. For further information on products & development visit our website at www.justrightinc.com or email at adc@justrightinc.com

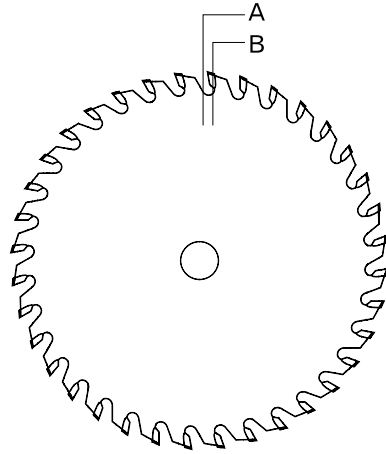
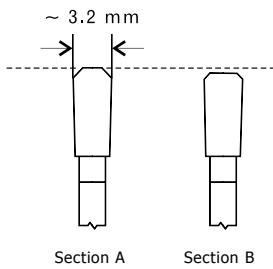
A. Sizing



rightBOND™ can be cut to size using the following methods.



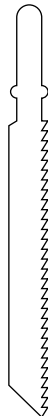
Circular Sawing



- rightBOND™ can be cut easily with circular saws.
- Circular saws can be mounted on different tools such as panel saws, plunge or portable saw.
- Table saw should not be used for cutting sheets larger than 1220mm x 1220mm [4'x4']



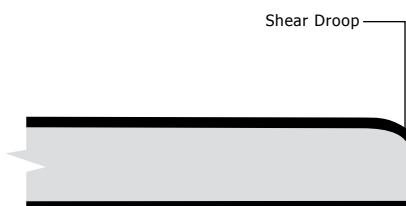
Jig Sawing



- Jig blade [Reciprocating Saw] Straight line and contour cutting is possible with Jig Blade.
- However care should be taken with rightBOND™ sheets as the vertical action of the blade can spoil the sheet if handling is not stable.
- When letter cutting make use of foam pad layer below.
- When using clamp to anchor the sheet, use suitable pads to ensure the sheet is not damaged.



Shearing



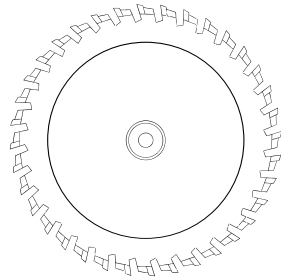
- **Shear**
- Square shear cutting is recommended for sizing rightBOND™ to desired dimensions, especially when requiring to cut large panels to various small sizes. Some shear droop may occur at the line of cut part of the top aluminium surface material.
- For shear cutting on a shearing machine the angle of shear varies as per the thickness of the sheet.

Thickness of rightBOND™	Clearance	Rake angle
3mm	0.002"	1°
4mm	0.002"	1° 30'
6mm	0.008"	2° 30'

B. Folding after Grooving



rightBOND™ sheets can be folded in order to prepare panels which offer additional rigidity to rightBOND™ to withstand physical loads. 'Folding' herein refers to right angled and acute angled folds with corner radius not more than 7mm. This folding process can be achieved only after providing grooves on the rear side. In the grooving process, the rear aluminium skin and polyethylene is carved out to leave the top skin with a very thin layer of polyethylene attached to it. The grooved portion is then folded easily to create a perfect fold.

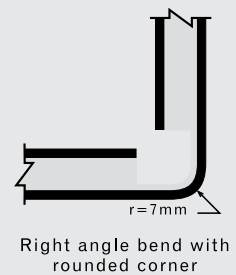
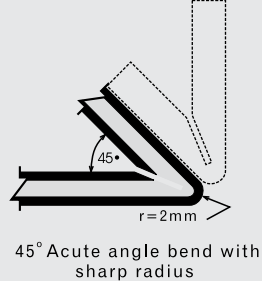
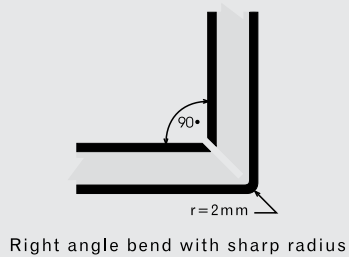
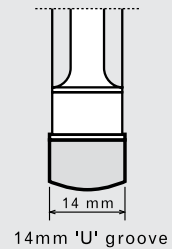
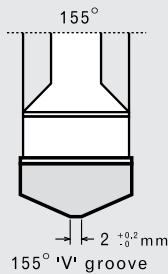
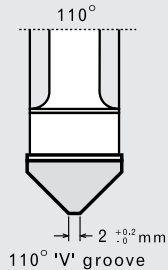


■ Grooving wheel

■ The grooves can be of different profiles and each profile can give different results. Refer diagrams

■ The depth of groove is critical. As a rule leave a layer of polyethylene in the valley of the groove. [less than 0.3mm]

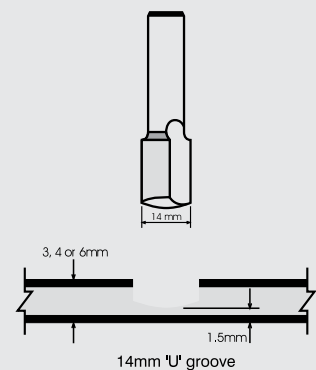
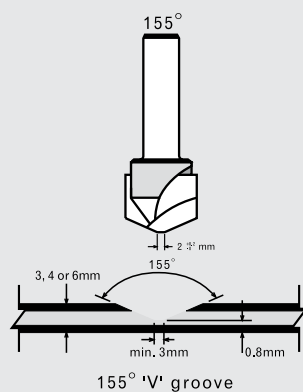
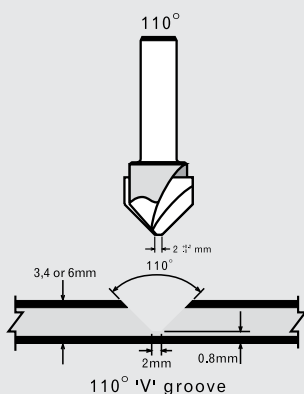
TYPES OF GROOVES



Routing

Routing bit

Grooves can be made on right BOND™ sheets using cylindrical router bits



Note: After folding, a nominal increase in panel size will be noticed as compared to routed lines measured center to center. The extent of the increase in dimension will be determined by the type of routing profile used and this factor should be taken into consideration when marking the groove line positions. Preliminary tests should be conducted to understand the adjustments required.

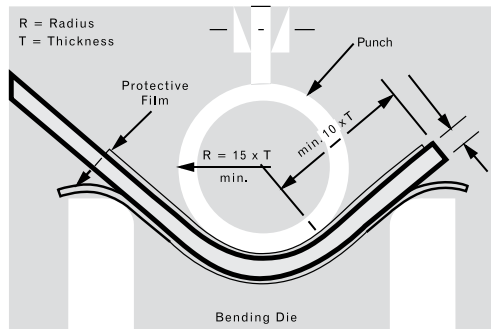
C. Curving



rightBOND™ can be curved to different curvatures using following methods. rightBOND™ can be easily curved using the following process: press brake three roll bender, pipe fixture.



Bending with press brake



PRESS BRAKE

Following critical criteria have to be taken into account when using press brake procedure:

Punch: Punch must be free from scratches.

It is recommended to use a fully polished punch.

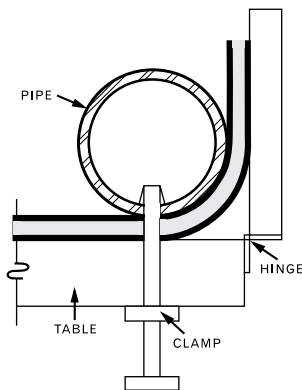
When selecting a radius for the Cylindrical punch of the press brake, use the following guide

Minimum internal radius for rightBOND™ = $10 \times T$

Minimum internal radius for rightBOND™ FR = $25 \times T$

T= thickness of rightBOND™

- Die: The die edges where protective film of rightBOND™ abuts must be round and smooth. In addition, to prevent scratches, a protective pad should be used on the die. The bending angle is determined by the width of the die and the stroke of the punch.
- The clear gap or distance between the die should be ascertained after preparing prototypes before production
- Side of the bent panel: Minimum length of shorter side of bent panel : $5 \times T$
T= thickness of rightBOND™

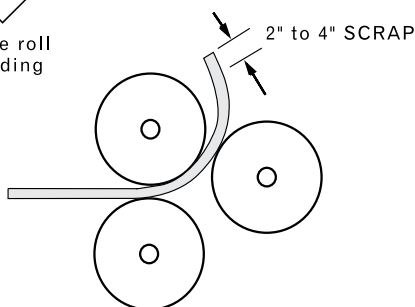


PIPE FIXTURE

- rightBOND™ can be curved over a former or pipe fixture. The sheet is placed on a firm base. The base, rightBOND™ sheet and the former or pipe fixture is clamped together from sides and the free end of the sheet is made to follow the roundness of the former or pipe fixture with the help of a swivel bar or hinged leaf.
- It is recommended to bend forward beyond 90° so that due to spring back, the sheet achieves perfect right angle.



Three roll Bending



- rightBOND™ can be bent with roll bending machines-mainly with 3 and 4 roll bending machines.
- Please make sure that the feeder does not exert too much pressure
- It enables larger bending radius than a press brake. The bending angle is determined by the diameter of the roll and the distance between the rolls. At the edges [start and end] the sheet remains straight, which should be cut. [SCRAP]

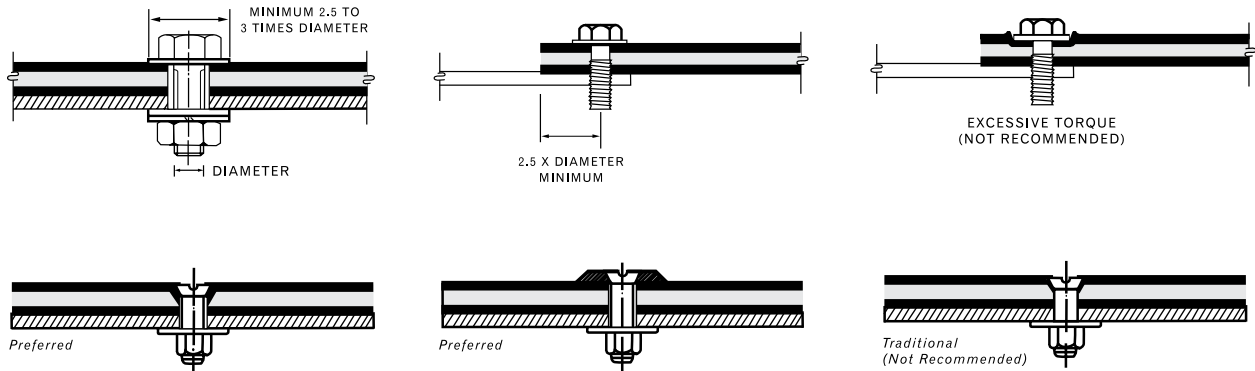
NOTE : Protective foil on rightBOND™ should be retained without air gaps or bubbles at all times during above procedures. It should also be free of any superficial material such as labels etc. The effect of springback varies in relationship to the bending direction, thickness, material temperature and radius required for bending.

D. Joining

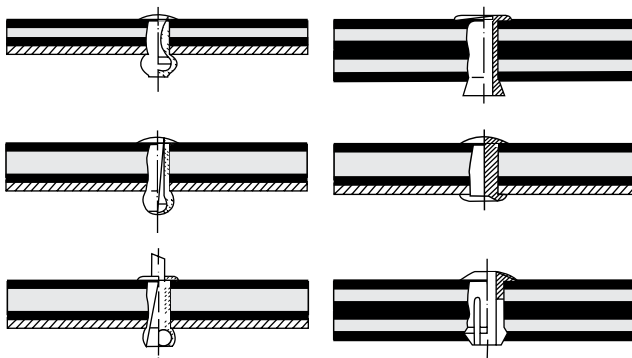


rightBOND™ sheet can be joined to each other or other materials. Acceptable materials include aluminium, plastic, stainless steel. Unacceptable materials include copper, brass, iron, mild steel. Should rightBOND™ be required to join with such unacceptable materials which causes electrolysis between elements, make use of caulking tape to act as an insulator.

To countersink into panel without prior preparation, tighten the nut and washer onto the bolt and draw the head of the fastener into the cover sheet. Counter-sink washers can also be used. Either method is preferable in lieu of traditional countersinking.



Rivets



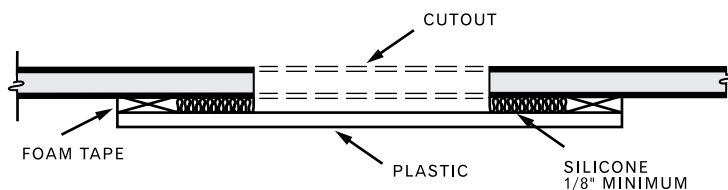
Panels of rightBOND™ Material can be fastened together or joined to aluminium extrusion profiles or other sheet metals with rivets common to aluminium construction. Blind rivets provide the advantages of labor saving, one-sided working of the material, and the reduced potential of surface damage. Semi tubular, solid and other types of rivets can also be effective on a production basis.

Place the closing or set-head on the side of the aluminium extrusion profile or sheet metal. When conditions do not permit this or when two pieces of rightBOND™ Material are to be joined together, use rivets with special wide closing heads or with tightly fitting washers.

When blind rivets are subjected to tensile strength tests, the head tends to "unbutton" from the rightBOND™ Material, or pull through the hole. Since this would cause localized tearing of the rightBOND™ Material, use the largest possible rivet head for connections that will experience loading.

Aluminium alloys such as 5032 and 5154 are suitable rivet material. Due to stress corrosion, alloy 5056 should not be used if the temperature of the manufactured parts is expected to rise over 140° F [160° C].

Rivet connections are well suited for parts that may be subjected to concussion or vibration. Colored Plastic concealment caps are available for various types of blind and tubular rivets. Consult the rivet manufacturer for details. Follow the directions and determine suitability by pre-testing.



Adhesive Bonding



Most adhesives and sealing compounds do not adhere to the polyethylene core.

To achieve reliable bonding, it is imperative to follow the adhesive manufacturer's instructions.

For interior design purposes, high strength contact adhesives that do not require long curing time can be used to achieve particularly high shear strengths. Where moderate cure times are acceptable, construction adhesives should be considered. When longer cure times are not objectionable, silicones can be used successfully. However, it may be necessary to hold the components with foam tape while the silicone sets. When using an adhesive to hold dissimilar materials, select one that will handle thermal movement without shearing. Use a low modulus sealant where greater thermal movement are expected [i.e. plastics to aluminium], and high modulus sealants if minimum movement is expected [i.e. bonding aluminium to aluminium]

Concealed Fastening:

Several fastening options are available, including adhesives and mechanical exterior building cladding, interior surfaces, signs, exhibits, store fixturers and furniture. Several fastening options are available including adhesives and mechanical attachments. All of these methods have medium to low load transmitting capacity compared to conventional fasteners.

E. Punching



rightBOND™ can be punched with manual, pneumatic and hydraulic process. Smallest possible hole should have minimum diameter of 4mm

Note: Punching with a press sometimes causes shear droop in the aluminium surface material. It is preferable to keep minimum clearance as possible between the punch and the die.

F. Drilling



rightBOND™ can be drilled with standard twist drills used for aluminium and plastics.

Drill material : high speed steel [HSS]

tool geometry

lip angle = 100° - 140°

or spot facing cutter with centre point

Angle of twist = 30 °- 45°



G. Transportation, Storage & Handling



rightBOND™ is a factory finished product and therefore requires care during transportation, storage and handling. Although rightBOND™ is provided with a protective foil on the finished surface, it is required to follow instructions given below to achieve best results with the panels.

Transport : rightBOND™ is packed in crates made out of wood and particle boards. It can be stacked one over the other upto four rows. As a rule, always place the heaviest crate at the bottom.

[Do not store rightBOND™ panel vertically inside a pallet]

Upon receipt of delivery, check for any damage for rightBOND™ due to moisture. Panels affected with wetness causing moisture must be dried to prevent stains or corrosion formation. Any damage to panels must be informed to the forwarding agent.

Wetness penetration due to rain, spray water and condensation must be prevented. It usually can occur when transporting from cold to warm rooms.

Storage when unpacked : Avoid staking rightBOND™ of different sizes together, as the surface or panel can be scratched by the edges of the smaller pieces. Store them by size in racks.

Sheets can be stored vertically, but at an angle, leaning to an angled rack with a rigid back that can support the sheets. To prevent the sheets from sliding out, place a rubber mat under the sheets on the floor under.

Handling: Individual panels must be lifted from the pallet or rack by two people holding all four corners. Do not slide sheets out as the aluminium edge can scratch other sheets.



H. Cleaning



Careful and regular rightBOND™ cleaning procedures are required to maintain surface of rightBOND™. Frequency of cleaning depends on environmental conditions. Both manual or mechanical cleaning is suitable.

As such rightBOND™ PVDF coated finish is easy clean and requires simple procedures to wash away dust and dirt. As a rule, cleaning should be carried out from top to bottom. While cleaning use the following method in order of increasing difficulty of removal.

Flush with water from hose.

Wipe lightly with soft cloth.

Use pressure water.

Use mild detergent in power wash or with soft cloth for hand wiping and flushing with water.

In case of stubborn stains or graffiti, use mild detergent, 3 to 10 parts with water depending on desired results.

Powerful chemicals such as acids, alcohols, alkaline cleaning agents such as potassium hydroxide, sodium carbonate or caustic soda, heavily abrasive agents, coating dissolving agents should not be used for cleaning.

I. Masking or Protective Foil



rightBOND™ sheets are provided with a factory applied protective masking film which should be removed within 6 weeks of installation.

The foils are also provided with directional markings to aid direction during installation to minimised reflection differences in metallic colors.

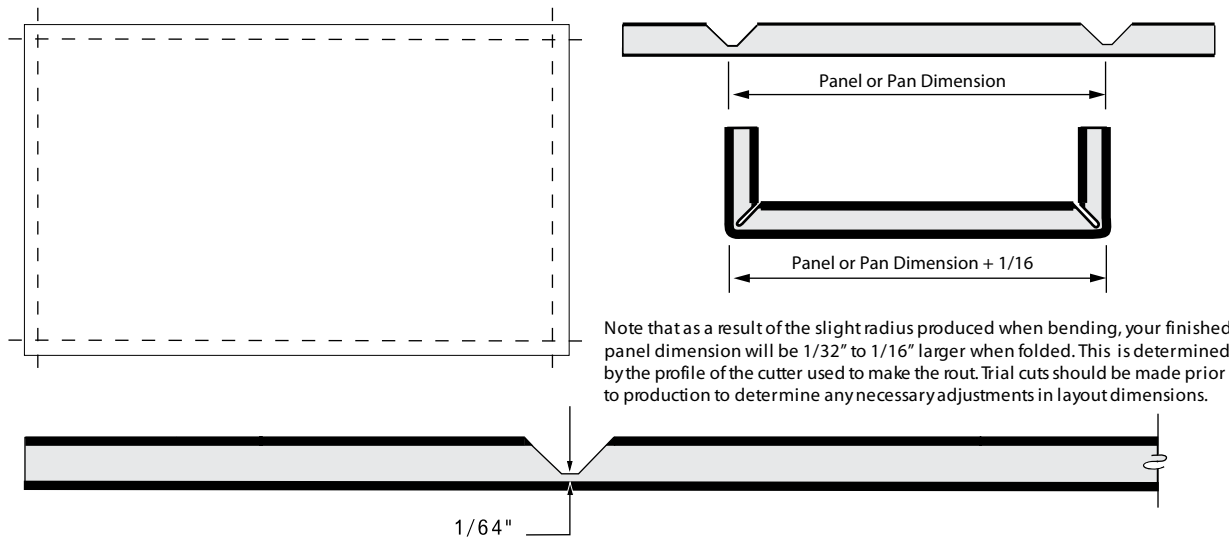


Installation Schemes

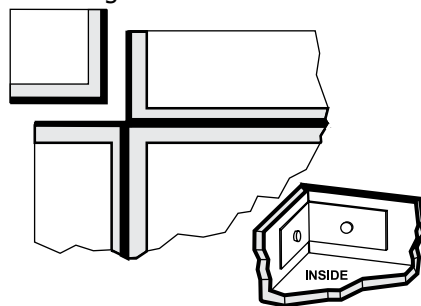
Typical Details for making panels Rectangular Panels

A "pan" is easily fabricated by routing all four sides, notching the corners and folding or returning each of the routed sides. This type of fabrication is commonly referred to as "Rout and Return"

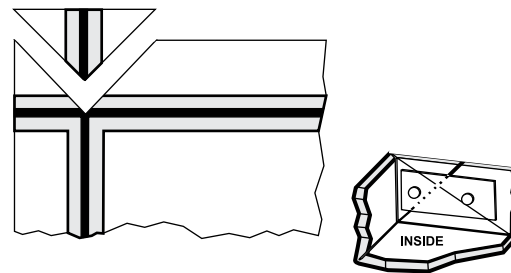
Grooving



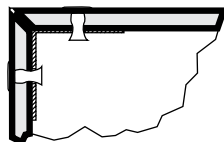
Corner Notching



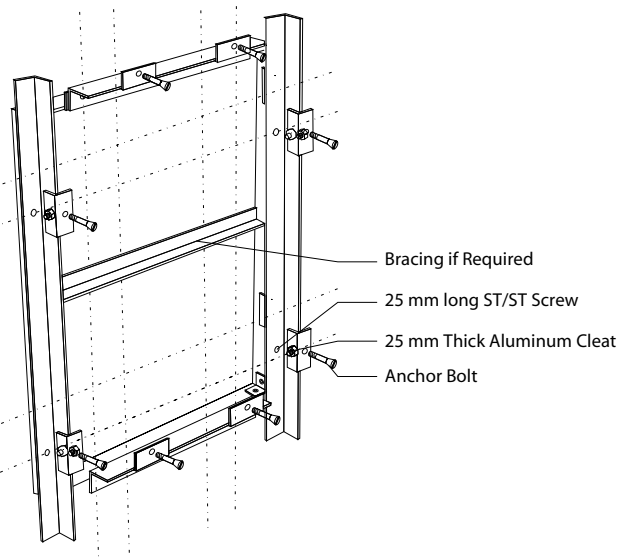
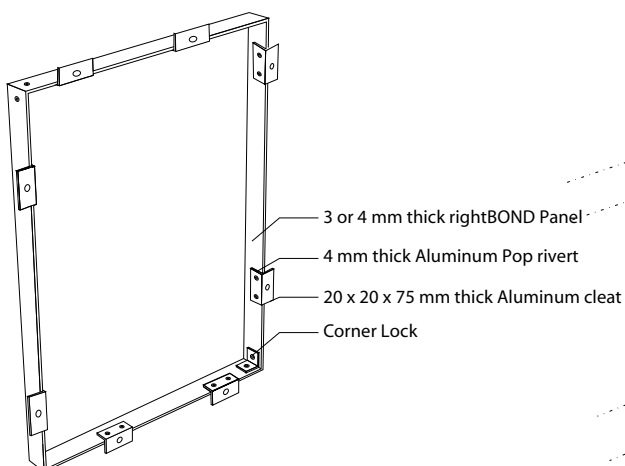
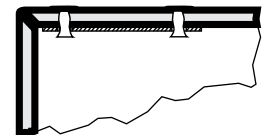
Square Corner Cutouts

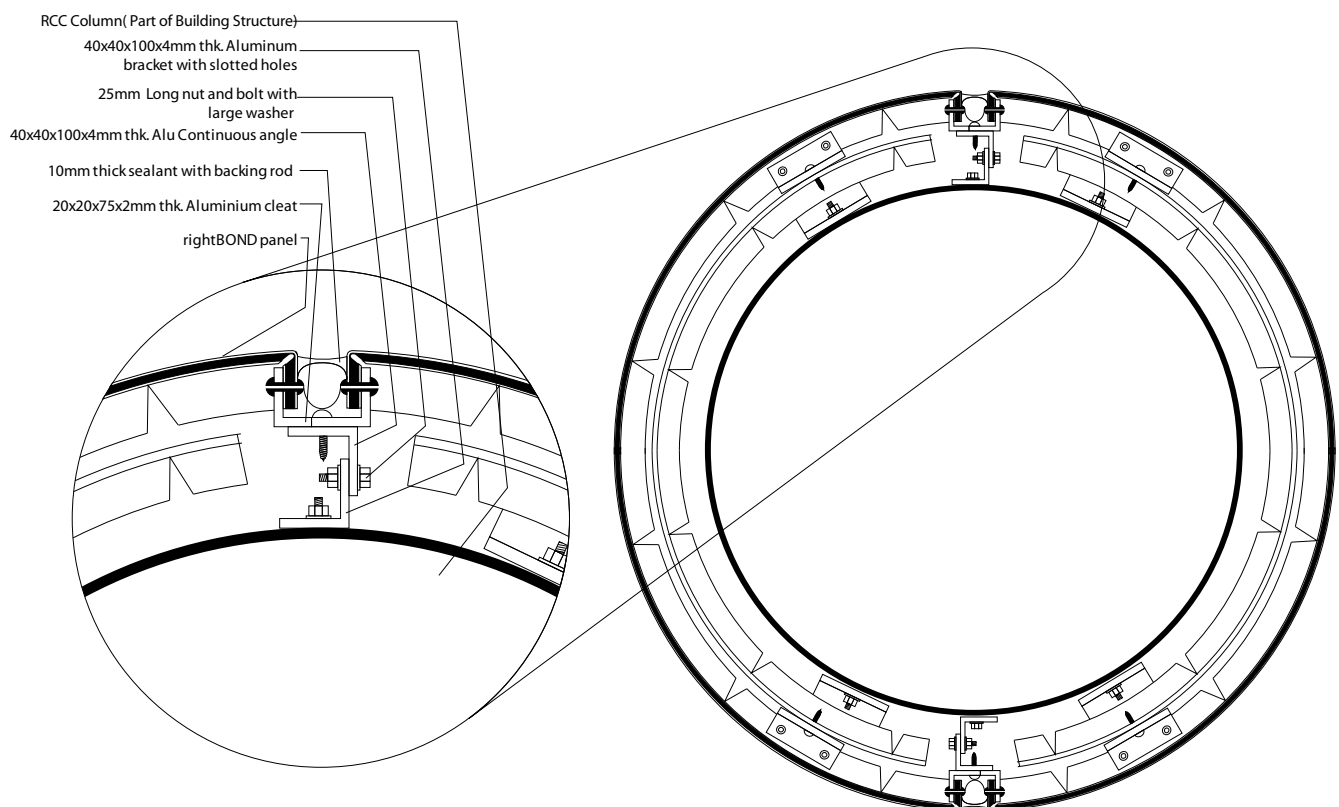
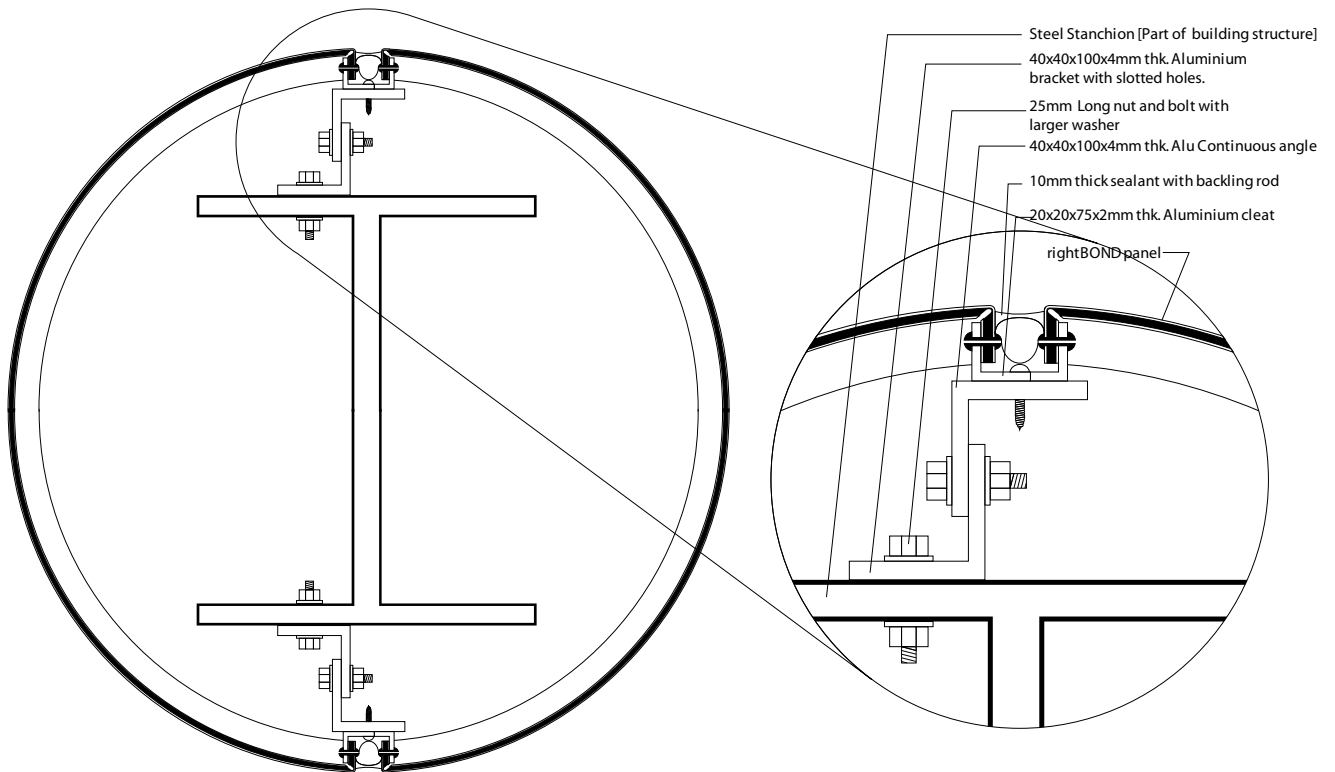


Envelope Corner Cutouts

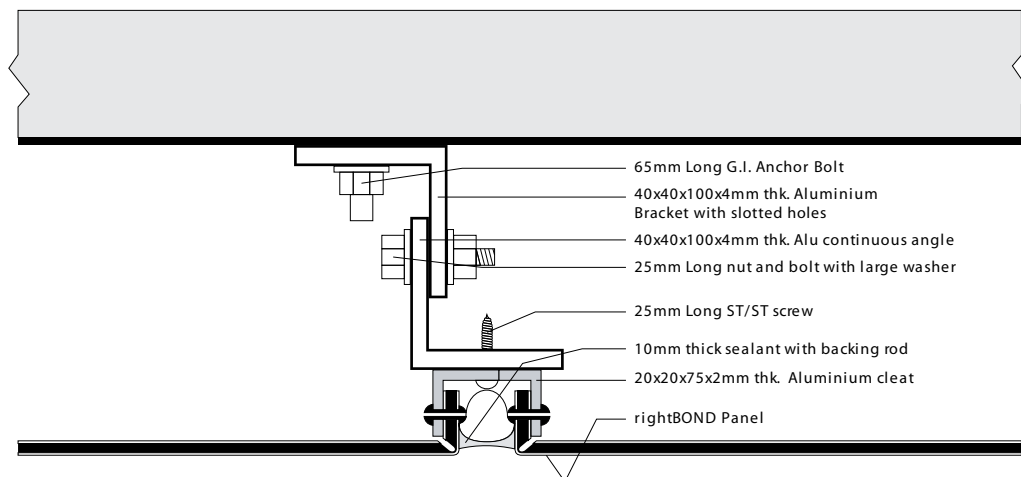


NOTE : It is not necessary to reinforce the returned corner. The material is most easily bent when the rout is made atleast one inch or more from the edge of the panel.

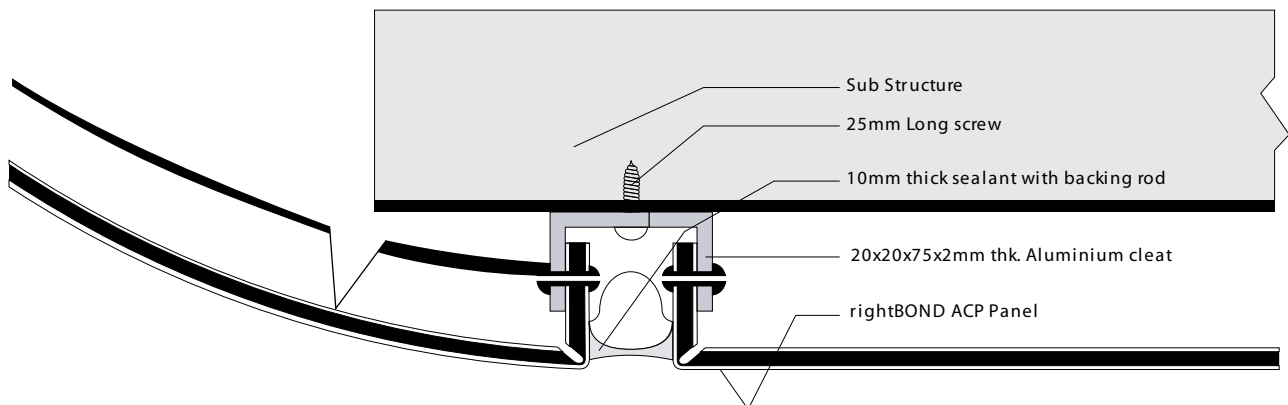




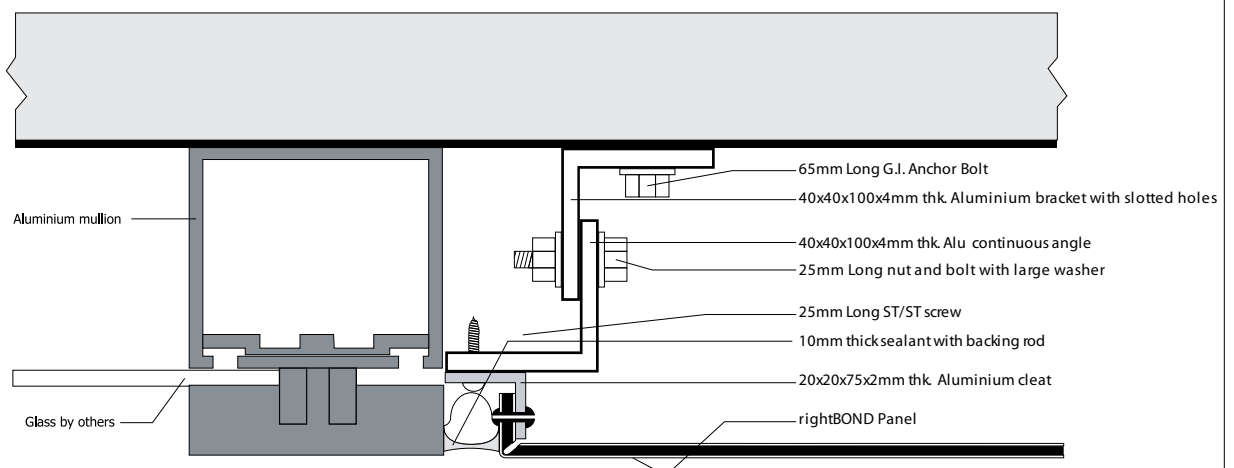
Cladding to Cladding interface [rectangular to rectangular]



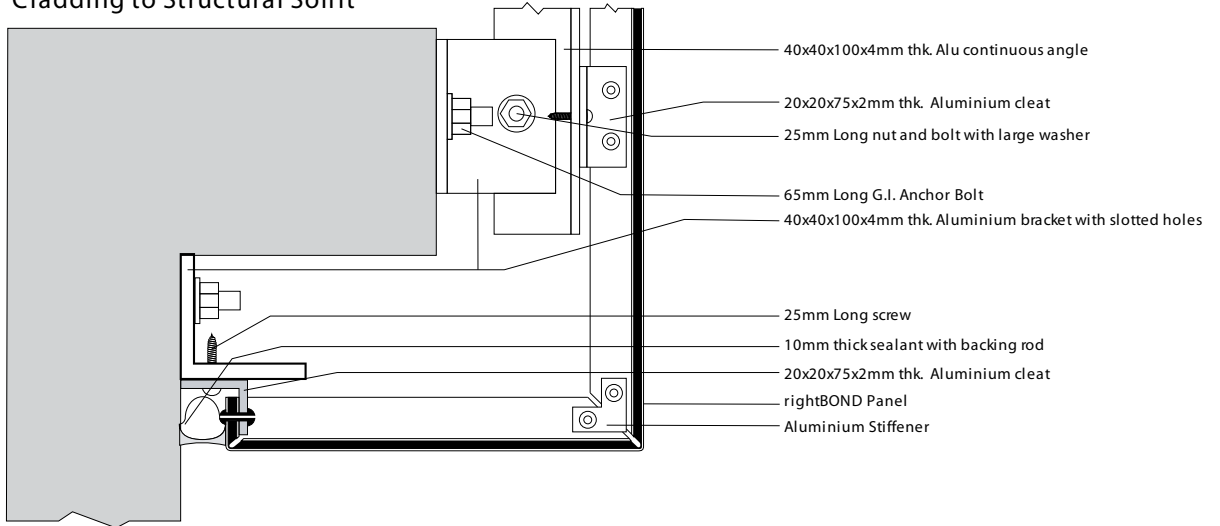
Cladding to Cladding interface [rectangular to rectangular]



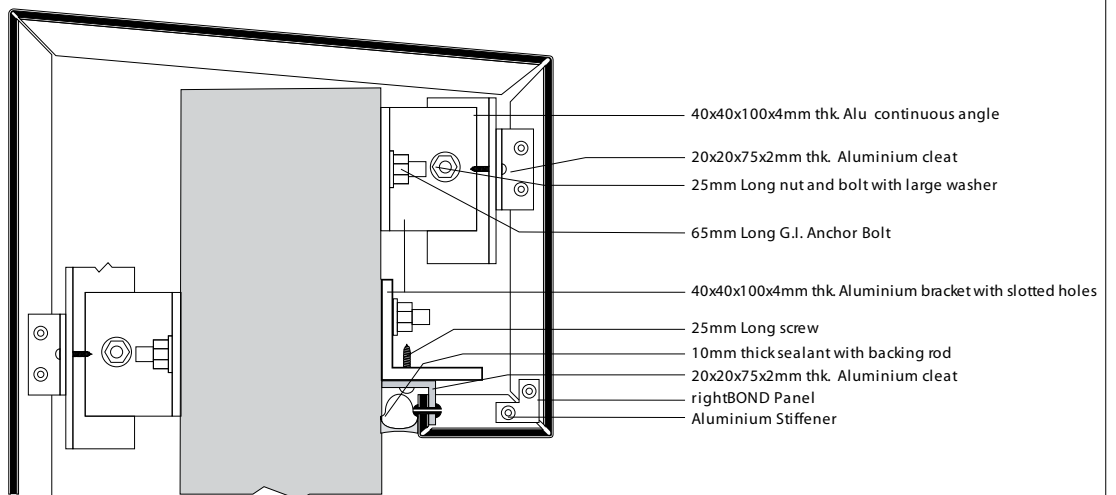
Cladding to curtain wall interface



Cladding to Structural Soffit



Cladding at parapet level



Accessories



1. 65mm Long G.I. Anchor Bolt



2. 25mm Long nut and bolt



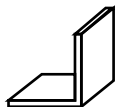
3. 25mm Long screw



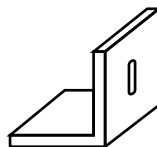
4. Aluminium pop rivet



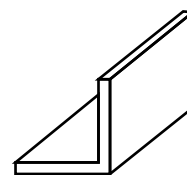
5. Sealant with backing rod



6. 20mmx20mmx2mm thk Aluminium angle



7. 40x40x100x4mm thk. Aluminium long aluminium bracket



8. 40 mm x 40 mm x 3mm thk continuous aluminium angle



PROJECT NAME	MULTI PLAST
LOCATION	DUBAI INDUSTRIAL AREA
MATERIAL	rightBOND pvdf, rBN 4095, 4 mm
AREA	2000 sqm



PROJECT NAME	RESIDENTIAL COMPLEX
LOCATION	SPRINGS
MATERIAL	rBN FR 4091, 4090 & CUSTOM COLOR
AREA	14,000 sqm



rightBOND™ eco Technical specifications

Aluminium Composite Panels, 3mm, PE Coated

Property	Values
Appearance	Clean surface without swell, flaws, scratch and aberration
Deviation of dimension	Length : $\pm 3\text{mm}$ Deviation of diagonal : $\leq 5\text{ mm}$ Width : $\pm 2\text{ mm}$ Out of straight at sides : $\leq 1\text{mm/m}$ Thickness : $\pm 0.2\text{mm}$ Warpage : $\leq 5\text{mm/m}$
Thickness of coating	$\geq 16\mu\text{m}$
Deviation of coating	≤ 10
Pencil Hardness	$\geq \text{HB}$
Toughness of Coating	$\leq 3\text{T}$
Coating Adhesive	Not less than Class 1
Impact Strength	50 Kg.cm Without Paint Off and Crack
Boiling water resistance	Boiling for 2h without change
Acid resistance	Immerse surface with 2% HCL [v/v] for 48h without change
Alkali resistance	Immerse surface with 2% NaOH [m/m] for 24h without change
Oil resistance	Immerse surface with 20# engine oil for 24h without change
Solvent resistance	Clean 100 times with Dimethylbenzene without change
Cleaning resistance	≥ 10000 times without change
Abrasion resistance Density of Surface	Specified value: $\pm 0.5\text{kg/m}^2$
Bending Strength	$\geq 60\text{ MPa}$
Flexuous modulus of elasticity	$\geq 1.5 \times 10^4\text{ MPa}$
Through resistance	$\geq 5.0\text{kN}$
Cutting Strength	$\geq 20\text{ MPa}$
180 Peel Strength	$\geq 5.0\text{N/mm}$
Resistance to change to temperature	- 40°C~80°C, 20 cycles without change
Heat deformation temperature	$\geq 95^\circ\text{C}$
Coefficient of heat expansion	$\leq 4.00 \times 10^{-5}\text{ }^\circ\text{C}^{-1}$
Weight	3.8kg/m^2
Sound aberration	24Rw dB
Thermal Performance R Value	$0.0080\text{ m}^2\text{ K / W}$
Water Absorption	0.1% by volume

right BOND™



PROJECT NAME	RESIDENTIAL COMPLEX
LOCATION	MEDIA CITY
MATERIAL	rightBOND pvdf, rBN 4091, 4mm
AREA	3000 sqm

right BOND™



PROJECT NAME	MULTI PURPOSE COMPLEX
LOCATION	TAIWAN
MATERIAL	rightBOND pvdf FR, rBN 4092, 4 mm
AREA	12,000 sqm

right BOND™



PROJECT NAME	TOSHIBA OFFICE & SHOWROOM
LOCATION	JAFZA
MATERIAL	rightBOND pvdf, rBN 4094, 4mm
AREA	1200 sqm

right BOND™



PROJECT NAME	OFFICE COMPLEX
LOCATION	JEBEL ALI FREE ZONE (DUBAI)
MATERIAL	4 MM rightBOND rBN - 4094
AREA	2,500 sqm

right BOND™



PROJECT NAME	RESIDENTIAL COMPLEX
LOCATION	SHARJAH
MATERIAL	rightBOND pvdf, rBN 4091, 4mm
AREA	1,200 sqm



PROJECT NAME	FERRARI SHOP
LOCATION	SHARJAH
MATERIAL	rightBOND rBN 3101
AREA	1,200 sqm

right BOND™



PROJECT NAME	SHOPPING COMPLEX
LOCATION	AL-AIN
MATERIAL	rightBOND pvdf, rBN 4094, 4 mm
AREA	2,000 sqm

right BOND™



PROJECT NAME	RESIDENTIAL COMPLEX
LOCATION	DUBAI
MATERIAL	rightBOND pvdf, rBN 4091, 4mm
AREA	1,200 sqm

right BOND™



PROJECT NAME	SHOPPING COMPLEX (without silicone joints)
LOCATION	GOLD SOUK
MATERIAL	rightBOND pvdf, rBN 4092, 4mm
AREA	3,000 sqm

right BOND™



PROJECT NAME	MULTI PLAST
LOCATION	DUBAI INDUSTRIAL AREA
MATERIAL	rightBOND pvdf, rBN 4095, 4 mm
AREA	2000 sqm

right BOND™



PROJECT NAME	QUICK RESTAURANT
LOCATION	SHEIKH ZAYED ROAD
MATERIAL	rightBOND eco, rBN 3102, 3mm
AREA	200 sqm



PROJECT NAME	QUICK RESTAURANT
LOCATION	SHEIKH ZAYED ROAD
MATERIAL	rightBOND eco, rBN 3102, 3mm
AREA	200 sqm

right BOND™



PROJECT NAME	OFFICE COMPLEX
LOCATION	DUBAI FREE ZONE
MATERIAL	rightBOND pvdf, rBN 4094, 4 mm
AREA	2.000 sqm

right BOND™



PROJECT NAME	ALOKOZAY
LOCATION	Jebel Ali Free Zone (Dubai, U.A.E)
MATERIAL	4 MM rightBOND (409 I)
AREA	3,000 sqm

right BOND™



PROJECT NAME	SWAROVSKI SHOWROOM
LOCATION	KUWAIT MALL
MATERIAL	rightBOND eco, custom color matched
AREA	200 sqm

right BOND™



PROJECT NAME	RESIDENTIAL COMPLEX
LOCATION	SPRINGS
MATERIAL	rBN FR 4091, 4090 & CUSTOM COLOR
AREA	14,000 sqm

right BOND™



PROJECT NAME	RESIDENTIAL COMPLEX
LOCATION	TECOM
MATERIAL	4 MM rightBOND rBN - 409 I
AREA	3,500 sqm

just

right POILICY

the **right** PRODUCT

the **right** ENGINEERING

the **right** SIZE

the **right** QUANTITY

the **right** QUALITY

the **right** EFFORTS

the **right** PRICE

the **right** APPLICATION

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